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A DATA-BASE MANAGEMENT SYSTEM
FOR OPERATIONAL REMOTE VIEWING (S)

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This document consists
of **24** pages.

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I OBJECTIVE

In this document we propose the application of a computer data base management system (DBMS) (with associated operational RV assessment forms) to the organization of the client's RV data, including trend analysis through multi-variable DBMS manipulation of the data.

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II INTRODUCTION

A. Background

As operational remote sensing by psychoenergetic means evolves from the demonstration phase toward full status as a recognized intelligence collection technique, it is necessary to develop an overall accurate assessment of the large amount of data collected to date, and to be able to recognize significant trends within that data. In addition, as the data base continues to expand, a convenient archival technique with rapid access to the data is mandatory.

It is possible to ascertain interesting trends by casual examination of the raw data transcripts. However, this type of informal inspection does not easily provide the detailed, multi-variable analysis by which to optimize further collection assignments, and it may lead to underutilization of RV'er resources. A mission officer could in principle increase contribution in the operational environment on the basis of correlation revealed by detailed DBMs analysis of previous results.

A data base management system provides at least three major advantages over manual inspection. DBMS

1. indicates optimal use of multiple RV'ers for specific operational targets of interest,

2. efficiently archives and cross-correlates rapidly increasing volumes of RV data, and

3. provides means for recognizing and implementing more subtle targeting strategies for individual RV'ers.

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Appendix A contains the introductory comments of one such DBMS as an illustration.

B. <u>Proposal</u>

We propose to select a standard data base management system (DBMS) which optimally meets the client's requirements, and to construct RV data assessment sheets to simplify data reduction. We further propose to create a data base from existing data, and to initiate a multi-variable search for important trends.

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III METHOD OF APPROACH

It is important to note here that the technology of data base management systems (DBMS) is finely developed. The required computer codes already exist; it is necessary only to select that system which is most tailored for application to the client's needs.

Once a DBMS has been selected, we will modify and expand the tentative prototype RV assessment sheet (shown in Appendix B) so that it conforms to the constraints of the DBMS and accommodates the specific needs of the client organization supplying the data. It is presently envisioned that a number of assessment sheets would be developed and tailored to the type of facility targeted for the session under consideration. The following is a tentative list of possible operational remote sensing target assessment categories.

SG1A
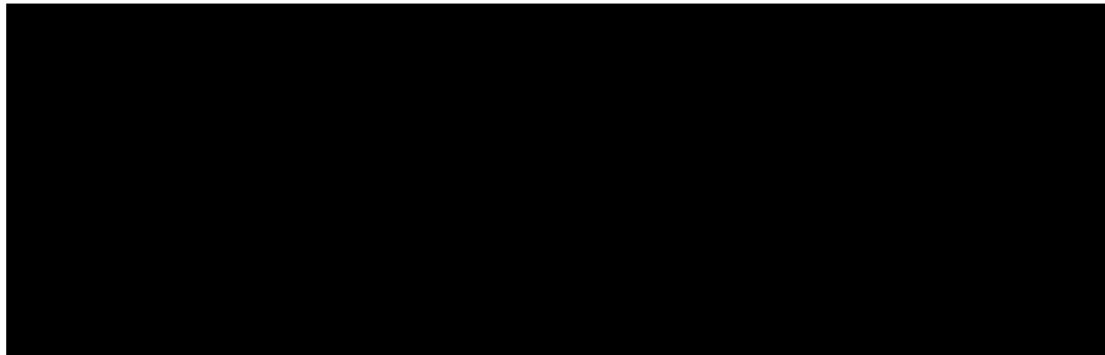
We propose to work with the client organization to provide instructions and guidance to reduce the current data for entry into the DBMS. We would then create the data base using the DBMS itself, working closely with the client to initiate trend searches.

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IV PROPOSED PROGRAM

We propose the following:

- Select an appropriate DBMS.
- Construct a series of task-related assessment sheets.
- Build a data base from contractor and client-completed assessment sheets.
- Initiate trend analysis and produce computer-generated reports describing the results.
- Provide access to the data base by the client organization and recommendations for an in-house DBMS capability.

It is proposed that the above program be completed on a one-man year level-of-effort basis. We envision a single year's expenditure of approximately $75K. An itemized cost breakdown will be provided on request.

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Appendix A

INTRODUCTORY CHAPTER OF THE PRIME 400 DBMS

SECTION 1

INTRODUCTION

INTRODUCTION

PRIME/POWER is a complete data management system combining the features
of Prime's operating system (PRIMOS) with the simplicity of a
high-level, user-oriented query and report language. With PRIME/POWER,
anyone can quickly learn on-line data management at an interactive
terminal. It is not necessary to know anything about programming or
data processing to use PRIME/POWER.

The POWER language is based on simple, easy-to-understand English
commands. Using interactive dialog in all its operations, POWER
prompts (asks) you for the input it needs to perform each function. If
you give it the wrong information, POWER displays an error message
describing the problem. POWER's HELP command provides a brief
description of the function and format of any POWER command.

PRIME/POWER and PRIME/POWER+

POWER has two versions: PRIME/POWER and PRIME/POWER+. PRIME/POWER
runs on all Prime CPUs, from the PRIME 350 on up through the 750. It
provides the basic query language, report writer, data entry and
maintenance functions required for simple data management.

PRIME/POWER+ expands these capabilities by providing the end user with
the tools for system development. The additional features include
formatted data entry, validation of data entry, text and keyword
processing, table processing, a dictionary file for keywords,
sophisticated report features, procedure files with variables, file
linking, multi-file reporting, concurrent usage safeguards, and a
versatile EDITOR facility. PRIME/POWER+ runs only in V-mode on a 350
CPU and up.

Common Features

PRIME/POWER and PRIME/POWER+ use PRIMOS file utilities to create,
interrogate and update all types of standard data files. These file
types are: MIDAS (index sequential), binary sequential, binary direct
access and ASCII sequential. Files created outside the POWER system
can be easily overlaid, or mode compatible with POWER. Such files can
then be interrogated and updated like any POWER-created file.

Since PRIME/POWER and PRIME/POWER+ are self-contained, all data
management operations can be performed entirely within the POWER
system. In addition, all files created or overlaid by POWER are
accessible by applications programs written in COBOL, FORTRAN, PL/1,
RPGII and BASIC. Similarly, files created by such programs can be

overlaid and interrogated with POWER.

Features of PRIME/POWER and PRIME/POWER+

The common features of PRIME/POWER and PRIME/POWER+ include:

- Easy-to-use interactive language.

- Up to 20 user-defined direct access keys.

- Support for complex search expressions, including range evaluation.

- Automatic data length check during data entry.

- Interface to all standard file types: Index Sequential (MIDAS), ASCII sequential, binary sequential and binary direct access files.

- Simple creation of all standard file types.

- POWER-created files accessible by applications programs (COBOL, BASIC, FORTRAN, etc.).

- Simple data update capabilities.

- Basic report-writing features.

- Extensive computational functions.

- Support for all standard data types, including COBOL COMP-3 and DECIMAL.

- Procedure files to perform routine or repeated operations.

- Automatic retention of CREATE and ADD dialogues for easy procedure file creation.

- Password-oriented security system.

Features exclusive to POWER+

- Ability to define and search on keywords.

- Text processing and editing.

- Support for tables in files and reports.

- File-locks to prevent simultaneous file modification.

- Dynamic and static file linking.

- Range checking for data input.

- Computed fields and linked files in reports.

- Support for different terminal features.

- Screen formatting for simplified data entry.

- An EDITOR facility for text, keywords, and procedure files.

- System-level audit and accounting facilities.

INTRODUCTION TO DATA MANAGEMENT

'Data management' is a widely used term which refers to the organization and upkeep of large quantities of information. This can be a difficult task; however, a simple approach often yields the best results. The POWER system is designed to make data management as simple and painless as possible. If you have never used a data management system or language before, the summary below should help put some terms and concepts into perspective.

Data Management: The Basic Concepts

Data management involves five basic operations:

1. Organizing and storing information (data).
2. Retrieving and optionally reporting on specific data items.
3. Updating information in a file.
4. Adding new data to a file.
5. Deleting data from a file.

These data management operations are based on several general concepts:

- Information, or data, can be stored and accessed most efficiently using computer facilities. ('Data' refers to two or more 'pieces' of information, while 'datum' refers to a single piece of information.)

- Similar information is grouped into files; e.g., all data pertaining to a company's employees may be put into an Employee file.

- Files are composed of records; for example, each record in an employee file might contain several pieces of information pertaining to a single employee. See Figure 1-1.

- Each record in a file is usually divided into one or more fields each of which contains a singular piece of information. An Employee file record might contain fields like last name, first name, social security number, date of hire, etc. These fields are common to

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FIELDS

FIELD NUMBER	FIELD 1	FIELD 2	FIELD 3	FIELD 4	FIELD n
FIELD NAME	LAST NAME	FIRST NAME	SOC. SEC. NO.	BIRTH DATE	
RECORD 1	Jones	Steve	323-40-5940	2 DEC 53	
RECORD 2	Harris	Mike	100-07-4091	23 MAY 49	
RECORD 3	Uminsky	Becky	231-57-5921	25 MAY 52	
RECORD n					

Figure 1-1. Employee File Records

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every record in the file.

- Each field within a record is given a name which accurately describes the information it contains. Such field-names are referred to as descriptors or keys. Ordinarily, one retrieves certain pieces of information from a file by specifying the search conditions, fields or keys must meet in order to be retrieved. Only those field values which satisfy the stated search conditions are retrieved from the file during a search.

Data Management: The Basic Operations

What can be done with information once it is organized in files? Some of the possibilities are:

- Retrieve certain information from the file.

- Examine data.

- Perform arithmetic operations on the data.

- Change or update the data.

- Delete specific data items.

- Obtain a paper copy of the data (i.e., print it out).

- Format the data, and print it out in a 'report' format.

- Add new data to the file.

POWER TERMS AND CONCEPTS

Most of the terms used in POWER are very similar to those just discussed. There are a few modifications:

- In POWER, fields are named by descriptors.

- There are two types of descriptors: search and display. Search descriptors name fields which will be used as keys and will be frequently searched on. Display descriptors usually describe fields which are less frequently searched on.

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Terms

In addition to those defined above, the POWER vocabulary includes the following terms:

- File

  A collection of related information divided into common records. Each file has a unique set of descriptors or fields associated with it. For example, a file containing payroll information might contain one record per company employee. Each record is composed of several fields or descriptors, e.g., NAME, SALARY, AGE, etc.

- Data Base

  A group of interrelated files.

- Record

  A block of related data composed of one or more fields named by descriptors. A file is made up of one or more records.

- Descriptor

  A field that is common to all records in a file. Descriptors are defined when the file is created. For example, in a Personnel file, there may be several descriptors such as NAME, ADDRESS, PHONE, etc.

- Search Descriptor

  A descriptor that is used to retrieve a selected record or records. This descriptor can be used with the FIND, GET, PRINT or DISPLAY commands. Search descriptors can be up to 32 characters in length. (In a MIDAS file, each search descriptor is an index and is part of the index subfile.)

- Display Descriptor

  A descriptor that is used in a selected display or print of a record. These descriptors are used to sequentially search a file for information. Display descriptors can be a maximum of 80 characters in length. (In a MIDAS file they are not physically part of the index subfile, they are non-indexed fields.)

- Text (POWER+)

  A free-form portion of a record that may contain up to 50 lines of data. Each line can be up to 80 characters in length.

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- Set

  A group of records fulfilling any stated search requirement. A set is created as a result of a successful FIND, GET, or EXPAND command. For example, a FIND command may search using NAME IS 'SMITH' as the criteria. All records within the selected file whose NAME field contained 'SMITH' would form a set. Up to 49 sets can be active at one time per user.

- Current Set

  The last set created by a successful search operation, such as FIND, GET, or EXPAND.

- Keyword (POWER+)

  A word or phrase that is contained within a record or which appropriately describes a concept within a record; can be used as a search criterion. Keywords can be up to 20 characters in length. (Keywords are stored in indices 15-17 in a MIDAS file).

- Internal Keyword (POWER+)

  A keyword actually contained in the TEXT portion of a file. Keywords are defined by bracketing them, <like so>, as text is added to each record.

- External Keyword (POWER+)

  A keyword that is not contained within the text of a record. External keywords are logical search keys that describe or relate to the information contained in a particular record. External keywords are added to a record after the text has been entered.

Data Management in POWER

POWER offers all the basic tools needed for data organization and management. With POWER you can:

- Create a file with up to 20 keys (search descriptors) for retrieving information.

- Take an already existing file and define it according to POWER terms; called 'overlay'.

- Retrieve and display information from the file, using previously defined descriptors as search keys.

- Compute and update numeric data.

- Change fields in selected records or change file globally.

- Write simple command sequences (procedures) that can be performed repeatedly.

- Write reports to format data output.

- Delete data from a file.

- Add new records to a file.

Files Created by POWER

Most users of POWER will not need to worry about file types and structures; POWER takes care of file-related details for you. However, some users will need to know about the files POWER creates. The most commonly encountered files in the POWER system are called MIDAS, (Multiple Index Data Access Systems) files.

MIDAS files: MIDAS files are special data files structured for quick data retrieval. POWER can access these files using a 'direct' retrieval method.

Each MIDAS file has an associated index subfile, which serves as a quick look-up file (much like a phone book). All the search descriptors you've defined for the file are listed in the subfile along with their 'address' locations in the file. When you specify a descriptor to be searched on during a file query, POWER goes to the index subfile, looks up the descriptor and its address, goes to the data file and retrieves the proper records. This kind of search can be called the index access method.

Other files: Files of other types, such as ASCII sequential, may be created or overlaid in POWER. Sequential files are set up quite differently from MIDAS files. There is no index subfile for sequential files; therefore, all descriptor values must be searched for sequentially in the file instead of directly.

Sequential searching involves stepping through every record in the file, one after the other, in the order in which they are physically located in the file, until the desired one is found. When a descriptor is specified in a search expression, POWER goes directly to the file and searches every record until the proper descriptor (key) value is located. The sequential access method can take a lot more time than the index access method, especially if the file contains many records.

Display Descriptors vs. Search Descriptors

In MIDAS files, a descriptor defined as a display descriptor does not appear in the index subfile. When you search on a display descriptor, POWER must do a sequential search through the actual MIDAS file until the desired field value for the descriptor is found. In other words, for MIDAS files, search descriptors are accessed by the index access method; display descriptors, by the sequential access method.

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In sequential files, display descriptors are accessed sequentially, just as search descriptors are; however, they are usually reserved for fields not often searched on. The reasons for having both search and display descriptors are simple:

- You can define only 20 search descriptors per file (only 14 if you select the TEXT and KEYWORD option in POWER+); if you want more keys to search on, they must be defined as display descriptors.

- Search descriptors have a maximum length of 32 characters; Display descriptors have a maximum length of 80 characters.

- Display descriptors are usually the fields you won't search on frequently.

- In both POWER and POWER+, having display descriptors enables you to define up to 512 fields per record, instead of just 20.

CONVENTIONS

Throughout this manual, many symbols and conventions are used in describing command formats and syntax. There are also some special rules for defining descriptor names and file names in POWER. These conventions are listed below.

Command Syntax Rules

All POWER command formats are governed by the following syntax rules:

- WORDS-IN-UPPER-CASE

Capital letters identify command words or keywords. They are to be entered literally. If a portion of an upper-case word is underlined, the underlined letters indicate the minimum legal abbreviation.

- Words-in-lower-case

Lower case letters identify parameters. The user substitutes an appropriate numerical or text value.

- Braces { }

Braces indicate a choice of parameters and/or keywords. At least one choice must be selected.

- Brackets [ ]

Brackets indicate that the word or parameter enclosed is optional.

● Hyphen –

A hyphen identifies a command line option, as in: SPOOL –LIST

● Parentheses ( )

When parentheses appear in a command format, they must be included literally.

● Ellipsis ...

The preceding parameter may be repeated.

● option

The word option indicates one or more keywords or parameters can be given, and that a list of options for the particular command follows.

Command Format

The general format of many POWER commands is given below. Commands are in uppercase: lowercase words are 'arguments', or 'parameters'. Arguments are usually optional on a command line and can be any one of several values, depending on the context in which the command is being used.

$$COMMAND \ [Snn] \begin{Bmatrix} variable \\ descriptor\text{-}name \\ KW \end{Bmatrix} \begin{Bmatrix} 'value' \\ variable \end{Bmatrix}$$

Snn   Set number where nn is a number from 1 to 49.

descriptor-name   A specific descriptor name used in various search and display commands.

KW   Indicates that a keyword value is to be searched on or displayed.

'value'   Actual record value corresponding to the descriptor, variable or keyword named previously. Must be enclosed in single quotes.

variable   A numeric or character variable used in search or computation expressions.

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Some POWER commands accept one or more options from a list. These are represented as follows:

```
COMMAND    option-1
           option-2
              .
              .
              .
           option-n
```

If more than one option is specified on a command line, they are separated by commas or spaces, as indicated in each individual command format.

Special Characters

Several characters reserved for special uses by POWER cannot be included in descriptor names or file names. These special characters are:

```
. period
, comma
( left  parenthesis
) right parenthesis
/ slash
* asterisk
+ plus
- minus
= equal
< greater than
< less than
' single quote
```

The only characters listed above which can be used in defining file names are: period (.) and minus (-).

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Appendix B

A TENTATIVE RV ASSESSMENT SHEET

(S) INSTRUCTIONS TO ANALYSTS (U)

(U) The information provided as enclosure to this report was obtained in response to a collection requirement provided by _____. This information was acquired from a new and potentially valuable source of intelligence. Work is currently being pursued to determine the accuracy, reliability, and improvement potential of this source. Your remarks and attention to the evaluation sheet will be the basis for our assessment of this new collection technique. Therefore, the effort you expend will greatly assist us and will ultimately result in you receiving more data of increasing accuracy and reliability.

(U) While formulating your judgements concerning the data, the following comments concerning this new source of intelligence may be helpful.

(U) Foremost, the data is likely to consist of a mixture of correct and incorrect elements. Specifically:

(1) (S) The <u>descriptive</u> elements are generally of higher reliability than <u>judgements or labels</u> as to what is being described (recreational swimming pool may be mistaken for water purification pools, an aircraft hull may be mistaken for a submarine hull, etc.). Therefore, seemingly appropriate descriptive elements should not be rejected because of mislabeling.

(2) (S) The data often contain gaps (in a 3-building complex, for example, perhaps only two of the buildings may be described, and an airfield may be added that isn't there). Such gaps or additions should not be taken to mean that the rest of the data is necessarily inaccurate.

(S) Therefore, a recommended approach is to first examine the entire information packet to obtain an overall "flavor" of the response, reserving final judgement even in the face of certain errors, and then go back through for detailed analysis.

(U) If you have questions regarding the data you have received or on its evaluation please feel free to contact me at any time. Thank you.

SRI O-4410 This document consists of <u>5</u> pages. Copy No. ___*3*___	Classified by: DIA-DT Review on: 3 Nov 2000	████████ SG1J c/o L. Lavelle - Bldg. 44 SRI International Menlo Park, CA 94025

1

PSYCHOENERGETICS PROGRAM
OPERATIONAL TARGET FILE

(SRI Internal Use Only)

(U) Project Name _____

(S) Viewer _____

(S) Monitor _____

(S) Date _____ Time of Start _____ Time of Finish _____

(S) Client _____

(S) Priority   Urgent ☐ _____   Routine _____

(U) Target Key _____

( ) Variance from Standard Protocol _____

(U) Target ID No. _____

( ) Information Provided by Requestor _____

_____

_____

( ) Information Provided to the Monitor _____

_____

( ) Information Provided to the Source _____

_____

( ) Information Requested by Analyst _____

_____

(S) Date Information Delivered to Client _____

(S) Additional Data Request by Client   Yes ☐   No ☐

(S) Dates Additional Data Requests Met _____

( ) Remarks _____

_____

_____

(S) SUMMARY EVALUATION SHEET (U)

(U) For the summary evaluation, please check the following boxes as to the accuracy of the submitted material.

ACCURACY*

	Little Correspondence 0	Site Contact, with Mixed Results 1	Good 2	Excellent 3	Unknown	Not Applicable
(S) Geographical locale description (terrain, water, etc.)	☐	☐	☐	☐	☐	☐
(S) Large-scale manmade elements (cities, buildings, silos, docks, railroad lines, airfields, etc.)	☐	☐	☐	☐	☐	☐
(S) Small-scale manmade elements (antennas, computers, tanks, missiles, offices, etc.)	☐	☐	☐	☐	☐	☐
(S) General target ambience (research, production, administration, storage, troop movements, naval activity, air activity, weapons testing, etc.)	☐	☐	☐	☐	☐	☐
(S) Relevant specific activities (nuclear testing, missile firing, CBW storage, ELINT monitoring, etc.)	☐	☐	☐	☐	☐	☐
(S) Personality information (physical descriptions, actions, responsibilities, plans, etc.)	☐	☐	☐	☐	☐	☐

(S) Overall utility   None ☐   Marginal ☐   Useful ☐   Very Useful ☐   Cannot be determined at this time ☐

*(U) Definitions for the accuracy scale:
0 - Little correspondence . . . . . . Self explanatory.
1 - Site contact with mixed results . . . . . . Mixture of correct and incorrect elements, but enough of the former to indicate source has probably accessed the target site.
2 - Good . . . . . . Good correspondence with several elements matching, but some incorrect information.
3 - Excellent . . . . . . Good correspondence with unambiguous unique matchable elements and relatively little incorrect information.

( ) DETAILED EVALUATION SHEET (U)

Specific Transcript/Drawing Items	Evaluation*	Reference
1. ( )		
2. ( )		
3. ( )		
4. ( )		
5. ( )		
6. ( )		
7. ( )		
8. ( )		
9. ( )		
10. ( )		
11. ( )		
12. ( )		

*0 to 3 point scale of previous page.

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